

PCTWORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification: H04M 1/00	A2	(11) International Publication Number: WO 00/38393
		(43) International Publication Date: 29 June 2000 (29.06.00)
<p>(21) International Application Number: PCT/ZA99/00142</p> <p>(22) International Filing Date: 15 December 1999 (15.12.99)</p> <p>(30) Priority Data: 98/11609 18 December 1998 (18.12.98) ZA 98/11611 18 December 1998 (18.12.98) ZA</p> <p>(71)(72) Applicant and Inventor: FOURIE, Louise [ZA/ZA]; 7 Buffalo Street, Vygeboom, 7550 Cape Town (ZA).</p> <p>(74) Agent: NEL, Pierre, Hercules, 502 Tennessee Street, Fairlie Glen, 0052 Pretoria (ZA).</p>		<p>(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p>
		<p>Published Without international search report and to be republished upon receipt of that report.</p>
<p>BEST AVAILABLE COPY</p>		
<p>(54) Title: MODULAR COMMUNICATION DEVICE INTERFACE</p>		
<p>(57) Abstract</p>		
<p>The present invention relates to communications device and a method of and system for upgrading or expanding the service or functions of the device. Also included within the scope of the invention is a unique arrangement of multiple components around a modular structure allowing maximum flexibility and reliability. One or more electronic components link to at least one Processor housed in the main module or unit which in turn is connected or connectable to communication means for wireless broadcast and reception. Furthermore the unit includes medical applications including sensor and monitoring means to facilitate in recording of medical data of a user. Also the invention provides a structural layout to fit ergonomically around a user's arm or wrist and locking and unlocking means to secure and remove the device from the user's arm or wrist.</p>		

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakhstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LJ	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

WO 00/38393

PCT/ZA99/00142

OBJECTIVES OF THE INVENTION

Accordingly it is an object of the present invention to provide a device for interactive
5 communication which is worn by a user around an arm or wrist with ungradable
components to allow upgrading of the device and/or the expansion of its applications to
medical censoring and monitoring. The ungradable components may also include or
incorporate added features or functions or upgraded components forming part of the
communications device. Traditional communications devices although innovatively
10 designed never allowed it to be worn or by a user or be attached on an arm or wrist.
Furthermore medical censoring and monitoring devices worn by users to read and record
certain medical functionalities of a user has always been a tedious and uncomfortable
experience. Accordingly it is an object of the invention to provide a communication
device as well as a system for and method of upgrading and reading user medical data and
15 with which the applicant believes disadvantages of known systems may at least be
alleviated

20

WO 00/38393

PCT/ZA99/00142

MODULAR COMMUNICATION DEVICE INTERFACE

TECHNICAL FIELD

The present invention relates to a communications device in watch like arrangement with ungradable application modules for upgrading electronic components with variable
5 functions and applications. The communications device is modified to be functionally attached to a limb of a user such as the wrist and arm. It is envisaged that the communications device may comprise a first unit modified to be functionally attached to the limb of a user and a second unit which includes a communications unit. The first unit serves as docking station or cradle for the second unit. Of coarse the application modules
10 may be used in both the first and/or the second unit for the upgrading of applications and functions.

15

BACKGROUND ART

Traditional communication devices such as cellular phones are usually manufactured in a predetermined form and with predetermined functions. The present invention allows the communication device to be manufactured to fit ergonomically around a users arm or wrist
20 in a watch like arrangement. Furthermore the device may be upgraded with censoring and measuring components for reading medical data of a user. Also features and/or functions of the phone may be altered or upgraded by inserting or removing modular applications or upgrading modules in the communications device.

25

WO 00/38393

PCT/ZA99/00142

DISCLOSURE OF INVENTION

5 According to a first aspect there is included an electrically powered communication device comprising communication means including a primary processor associated with wireless reception and -transmission means of modular configuration; and a secondary processor , matched with the primary processor , adapted to record and to store data in memory associated with the device.

10

According to a second aspect of the invention the communication device may comprise a series of inter-associated, multi-functional modular units.

The modular units may be selected from: medical monitoring units, general monitoring
15 units , communication units recording units, memory units , externally functional units and power supply units.

According to a third aspect of the invention the communication device may be powered by a selection of : solar power, battery power and mains power.

20

Furthermore the communication device may comprising upgradable memory means and

WO 00/38393

PCT/ZA99/00142

the upgradable memory units may be housed in retaining means adapted to retain the device to a predetermined object in use.

According to the fourth aspect of the invention the communication device may include
5 display means adapted to display at least the medical sensed data from an associated sensor.

According to the fifth aspect of the invention the communication device may comprise
at least two components , the first being adapted to be removably secured to a
10 predetermined object in use and the second being adapted to house communication means.

The first component may be adapted to serve as a docking station for the second component so that both will be operatively functional.

15 According to a sixth aspect of the invention the communication device application modules may be adapted to function in association with the first and second components to upgrade its operational capabilities.

Of course the primary processor and the secondary processor may be the same processor
20

WO 00/38393

PCT/ZA99/00142

BRIEF DESCRIPTION OF DRAWINGS

Preferred embodiments of the invention will now be described by means of non-limiting examples
5 only, with reference to the accompanying diagrams wherein:

- Figure 1 is an example of the invention in watch or wrist accessory format;
- Figure 2 more specifically relates to the electronics of the unit or watch;
- 10 Figure 3 relates to the open and close position of the unit via the flexible/bendable links; and
- Figure 4 illustrates exemplary embodiment of the working or mechanics of the attach
15 and- release mechanism

WO 00/38393

PCT/ZA99/00142

BEST MODES FOR CARRYING OUT THE INVENTION

Turning to **Figure 1** which is an example of the invention in watch or wrist accessory
5 format (1) manufactured of flexible/bendable material (2) with a clip (3) for attachment
of the unit around the arm of a user to the clip housing (17). The invention includes bays
or modular unit interfaces (4,5 and 6) for upgrading of the unit's functions or capabilities.
Furthermore the unit may include display means (7) i.e. a LCD screen. Furthermore the
unit may include release buttons (8) and volume buttons to either increase or decrease the
10 communication volume (9 and 10). Also the unit may include communication means (11)
with other electronic equipment via cable connection or via IR. Also the unit may be
equipped with standard function or emergency keys (12 and 13) over and above the
standard keypad (15). The unit may be powered by on or more of the following;
rechargeable battery (16) and/or via Solar panels (14).

15

The back of the unit (18) may include a speaker (19) and microphone (24) for
communication as well as medical monitoring modules or units (20, 21 and 23) for
example for blood-pressure and heartbeat naming but a few. The modules may link or
interface with the central processor (not shown) housed in the main unit (23).

20

WO 00/38393

PCT/ZA99/00142

Figure 2 more specifically relates to the electronics of the unit or watch (25) including communication means with the one or more upgrading bays of units (26), a display device i.e. a LCD unit (27) a keypad (28) and a housing mechanism (29) for a remote communication link (30) including a microphone (31) and the speaker (32). Furthermore
5 the invention may include a wireless communication port of unit i.e. an Infra Red unit (33). The preferred unit may be powered by solar energy (34) and/or via rechargeable battery (no shown) which may be located in the bay (35) with standardized clips (36).
The unit (37) may include electronics for the speaker (38) and the microphone (47) which may be connected to the CPU (42). Also connected to the CPU (42) may be one or more
10 of the following; communication means for the ungradable components (39), output means i.e the display, (40), input means i.e. the keypad (41) and memory means (44). The electronic components may relay communication via the aerial (45) which may form part of the body or strap of the unit. The unit preferably includes electronics to accommodate the solar and/or battery power means (43) and the external communication means (46).

15

Figure 3 relates to the open (49) and close (50) position of the unit via the flexible/bendable links (49). The main unit with the display (51), keypad (54) and volume control keys (53) may be powered by solar (55) energy and/or via removable/rechargeable
20 battery (56) which may be housed on the strap or side section (57) or on the cradle unit

WO 00/38393

PCT/ZA99/00142

(not shown). Also a speaker (58) and microphone (59) housed or located on the side sections or straps (60) with normal clips (67 and 68). Furthermore the invention includes the upgrading of the unit or the addition of application modules (61 to 64) for purposes such as memory upgrade, and medical sensors (65). The side section is flexible or
5 bendable (66) to form around a users arm.

Figure 4 illustrates exemplary embodiment of the working or mechanics (81) of the attach - release mechanism(69) including for example a servo type unit (70) including a motor (71) and a shaft or servo arm (72) which is attached to the movable joint or segment (73)
10 for manipulating the movement of the units. Alternatively the same may be accomplished by a spring loaded mechanism (74) with a release button or device (75) for releasing a tension unit (76) i.e. a spring. Furthermore a hydraulic unit (77) may be used including a pressurized container or cylinder (78) with a movable shaft 979) that is attached to the segment bendable/flexibly unit. All of the above may applied to the communications
15 device as a single unit or when the invention comprises a first and second unit serving as cradle/docking device and the communication device (such as a cellular phone) respectively.

WO 00/38393

PCT/ZA99/00142

CLAIMS

- 1 An electrically powered communication device comprising communication means
including a primary processor associated with wireless reception and -transmission
means of modular configuration; and a secondary processor , matched with the
5 primary processor , adapted to record and to store data in memory associated with
the device.
- 2 A communication device as claimed in claim 1 comprising a series of inter-
associated, multi-functional modular units.
- 10 3 A communication device as claimed in claim 1 or 2 including modular units
selected from: medical monitoring units, general monitoring units , communication
units recording units, memory units , externally functional units and power supply
15 units.
- 4 A communication device as claimed in claims 1 to 3 powered by a selection of :
solar power, battery power and mains power.

20

WO 00/38393

PCT/ZA99/00142

- 5 A communication device as claimed in claim 4 comprising upgradable memory means.
- 5 6 A communication device as claimed in claim 5 including upgradable memory units housed in retaining means adapted to retain the device to a predetermined object in use.
- 10 7 A communication device as claimed in any one of the preceding claims including display means adapted to display at least the medical sensed data from an associated sensor.
- 15 8 A communication device as claimed in any one of the preceding claims comprising at least two components , the first being adapted to be removably secured to a predetermined object in use and the second being adapted to house communication means.
- 20 9 A communication device as claimed in claim 8 in which the first component is

WO 00/38393

PCT/ZA99/00142

adapted to serve as a docking station for the second component so that both will be
operatively functional.

10 A communication device as claimed in claims 9 and 10 including predetermined
5 application modules adapted to function in association with the first and second
components to upgrade its operational capabilities.

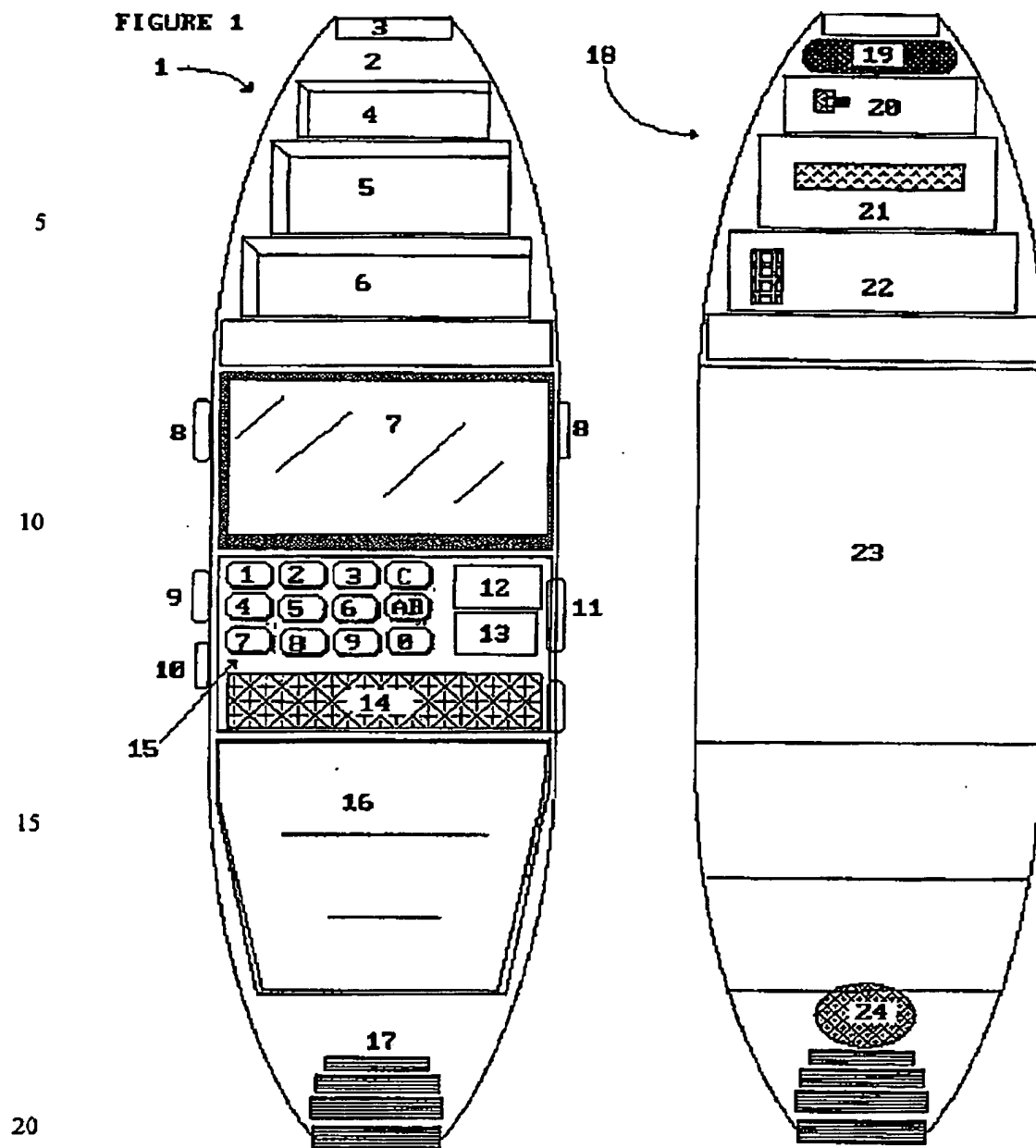
11 A communication device as claimed in claim 1 wherein the primary processor and
10 the secondary processor is the same processor.

WO 00/38393

PCT/ZA99/00142

1/4

FIGURE 1

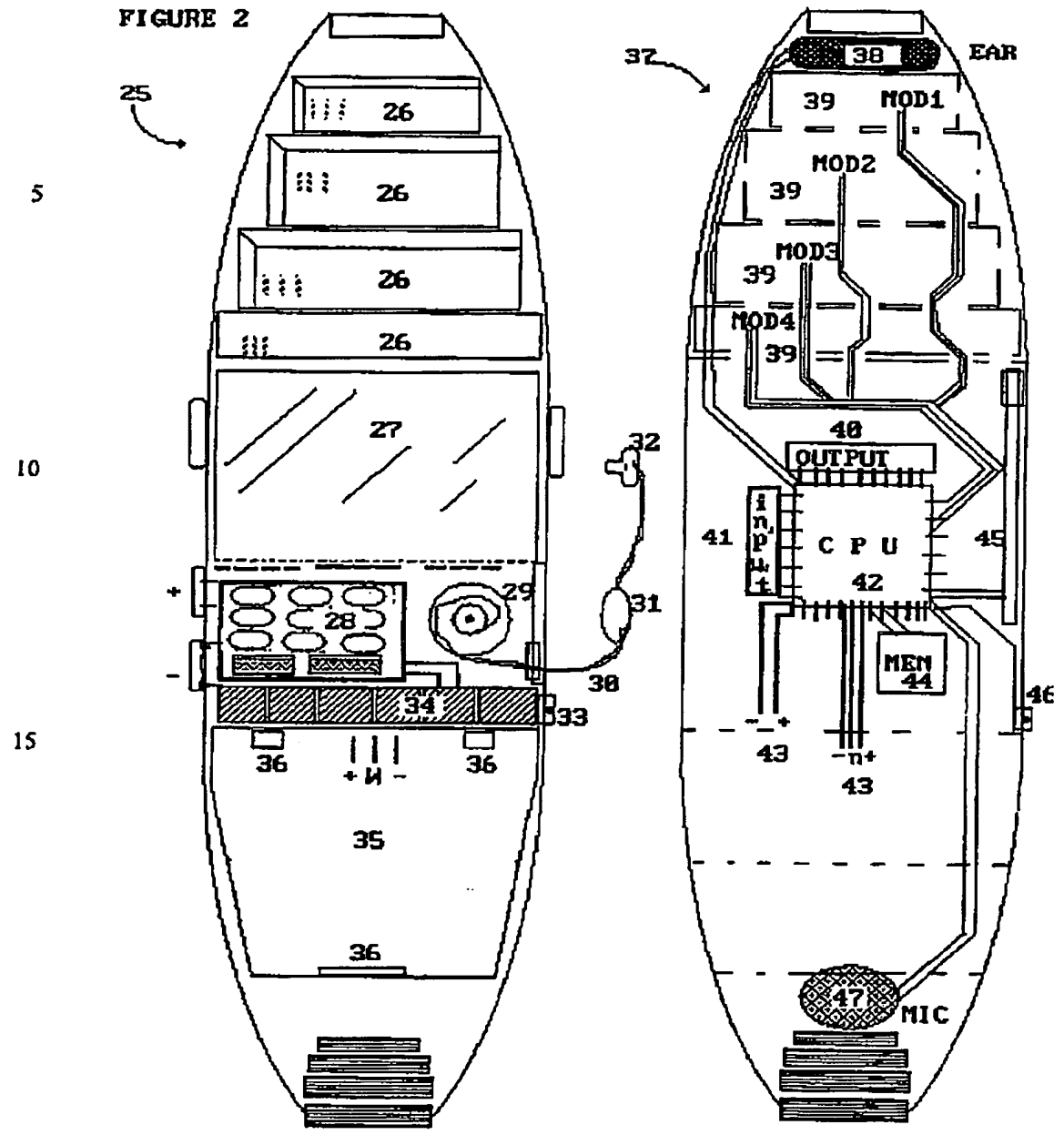


WO 00/38393

PCT/ZA99/00142

2/4

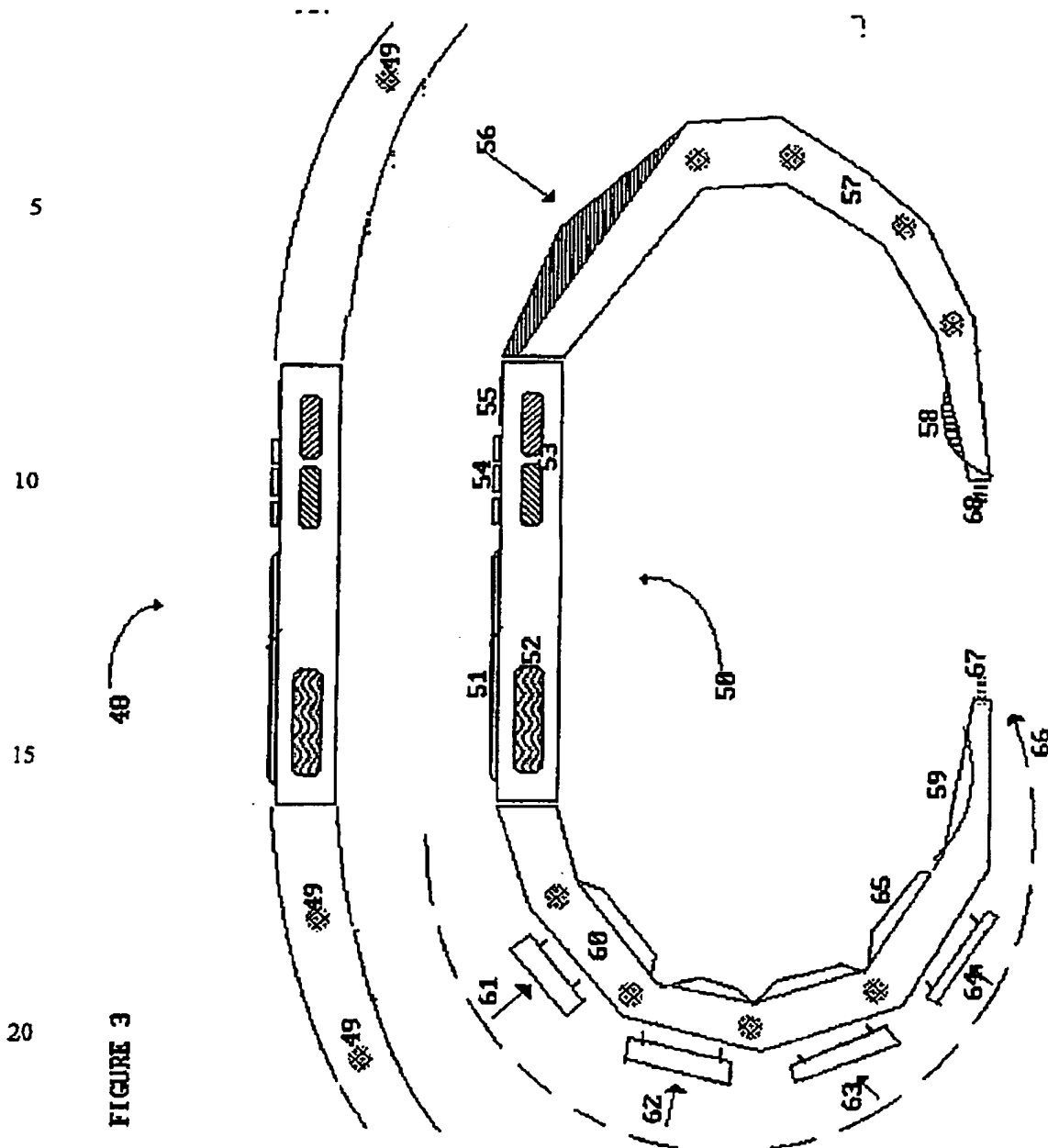
FIGURE 2



WO 00/38393

PCT/ZA99/00142

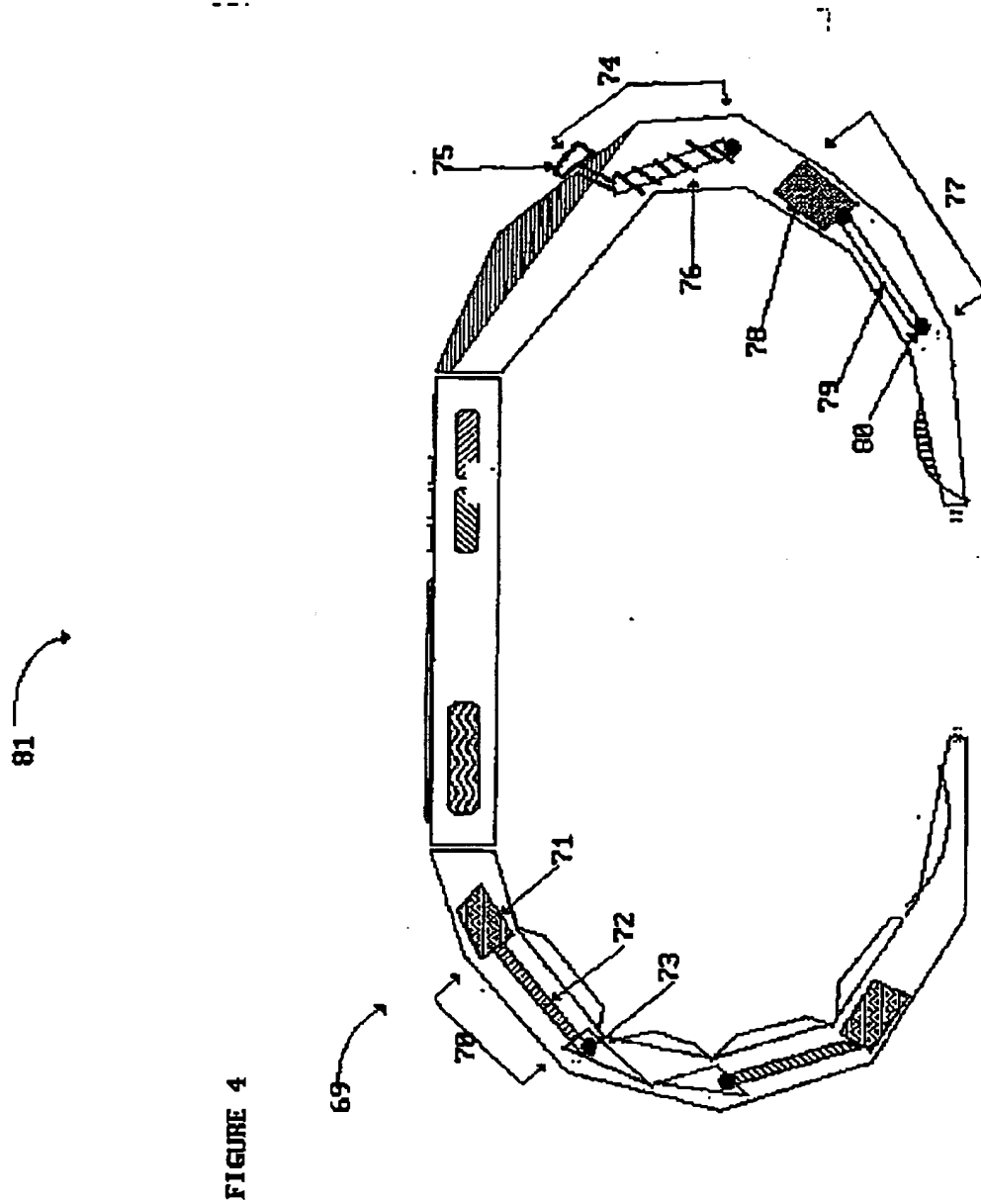
3/4



WO 00/38393

PCT/ZA99/00142

4/4



**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.